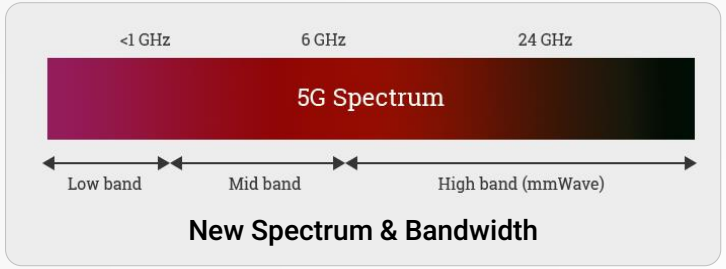
Testing and Analysing 5G Networks

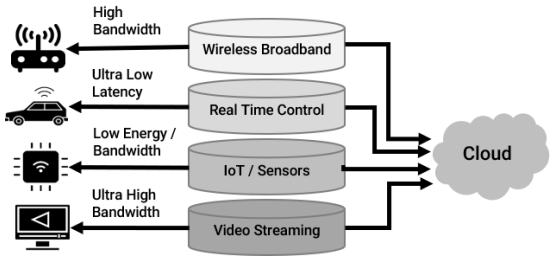
What is 5G and why we need it ?

Driving **innovation**, **competition**, and **cost effective solutions**

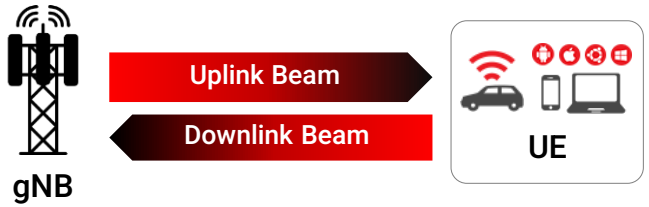
- Amalgamation of various technology
- Differential treatment for different types of network traffic
- Dynamic discovery of network functions
- MEC and PODs providing services, storage, and computing on network edge
- Multi-vendor, software centric network solution
- Cost effective way of creating private 5G core (NPN) - Private 5G



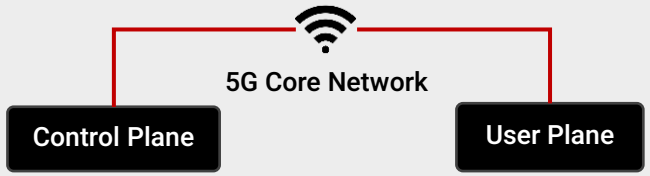
New Spectrum & Bandwidth



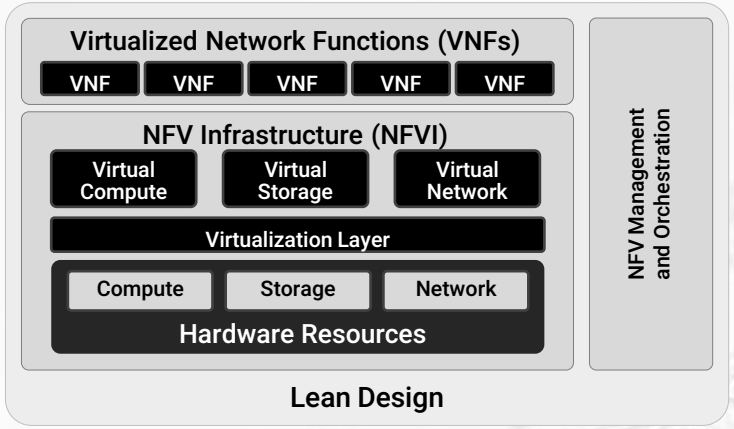
Network Slicing



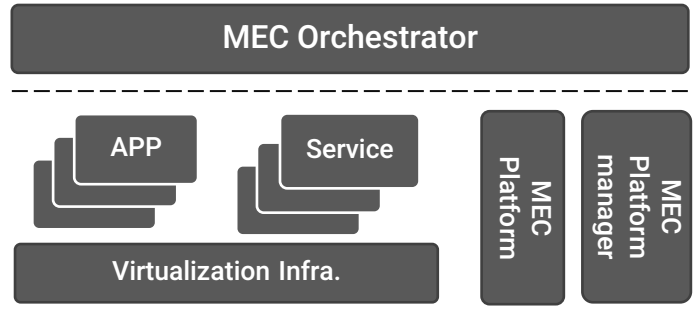
mMIMO & Beamforming



CUPS



Lean Design

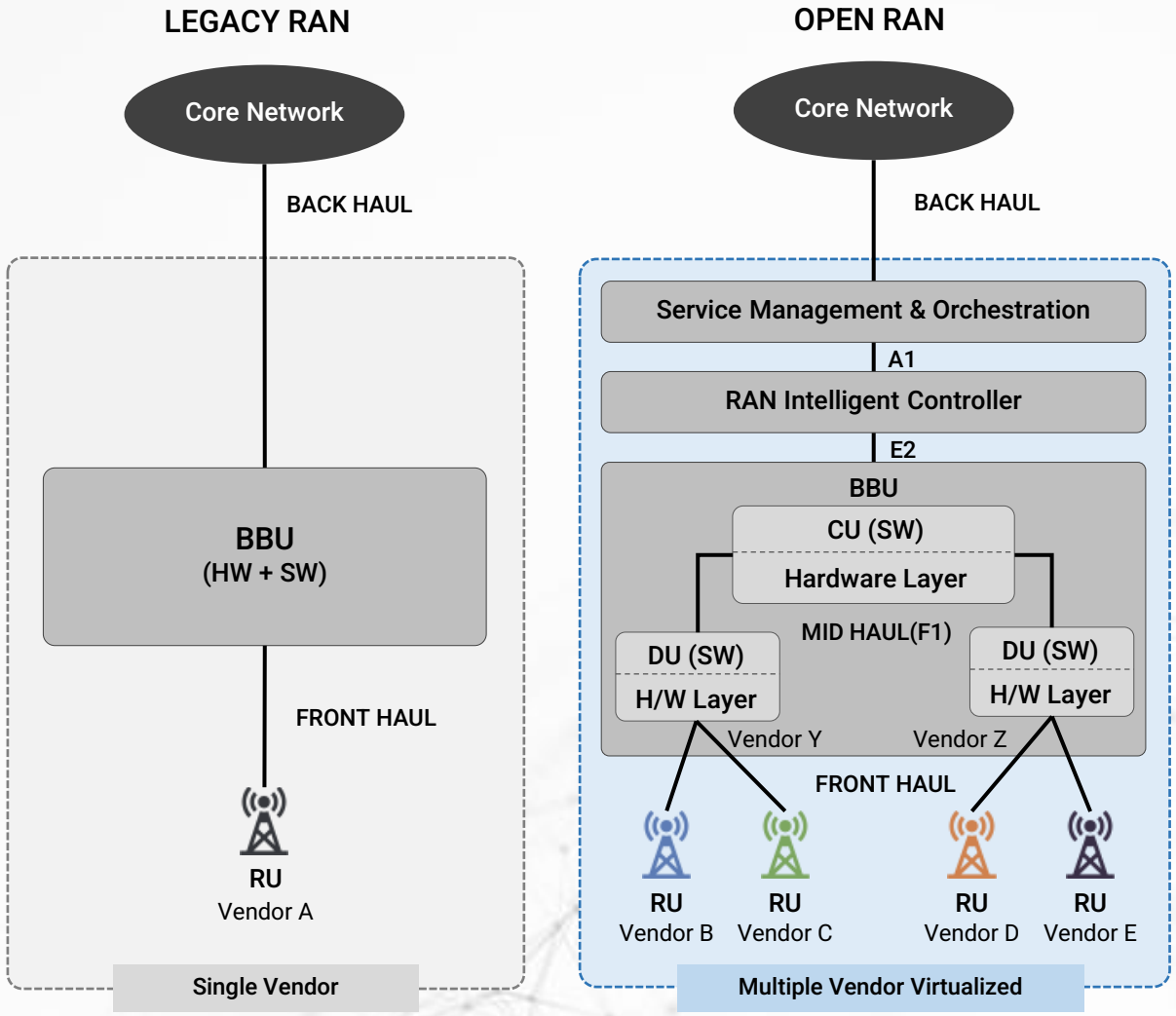


Multi-access Edge Computing

What is O-RAN and its role in 5G ?

- A true separation of the Radio network
- Disaggregation of the Radio Network to split CU and DU functions
- Introduction of Midhaul between CU and DU
- Service Management and Orchestration
- Enabling different Radio technologies to inter-operate
- Optimal utilisation of radio wave
- Uniform security mechanism

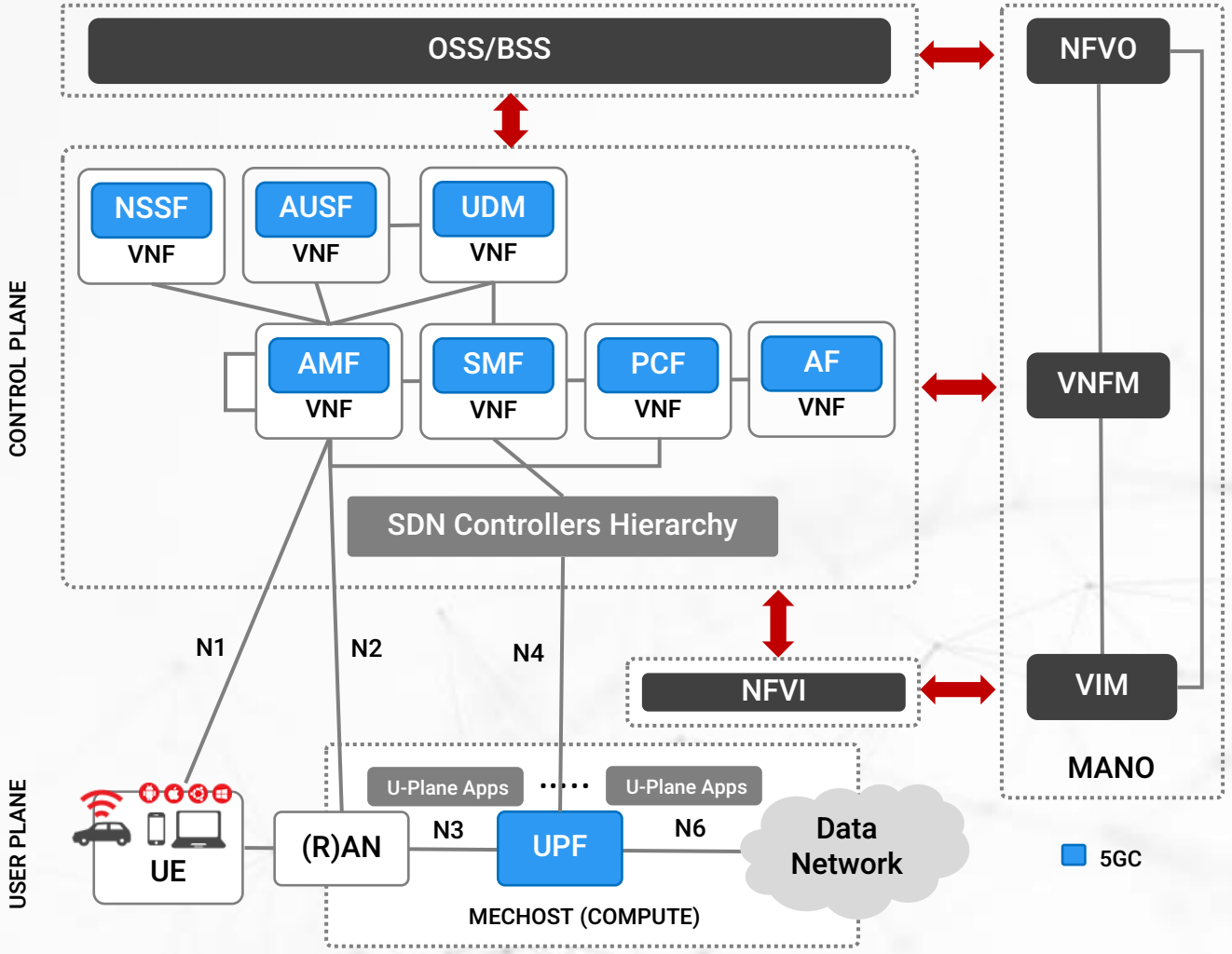
Disaggregated radio network enabling multi-vendor solution and driving **cost down**



Disaggregation and Virtualization in 5G ecosystem

- Cost-effective scalable Access and Core network
- Division of hardware resources into functions that can be controlled by software
- SDN, Control & Data plane separation
- Load balanced micro service based architecture
- Everything virtualized, software defined, and containerized all managed by Orchestrators

Demands Network Automation for **Test Assurance**, **Deployment**, **Monitoring**, and **Operating**

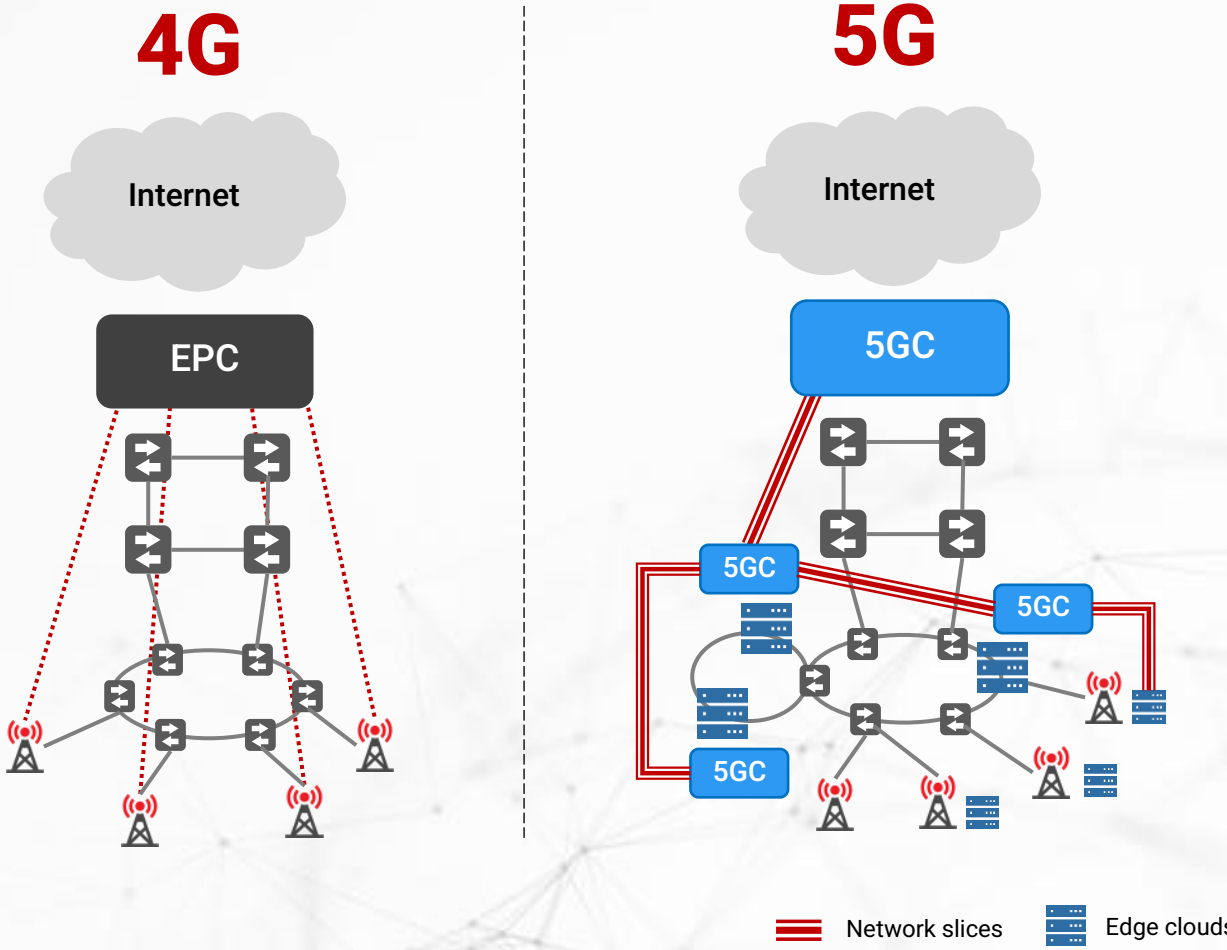


Testing and Analyzing 5G Networks

What's new in 5G:

- End to end complex use cases testing involving various types of NF
- Migration from monolithic node to micro service base NFs
- Emulation and verification of numerous scalable deployment scenarios
- Validation for CUPS, NSA, and SA architecture
- Test for different network slice, node selection, and functionality
- Functional, Conformance, and Performance testing

Multi-vendor NF interoperability, application specific **use cases**, KPI against various **infrastructure**, on-demand **scalability**

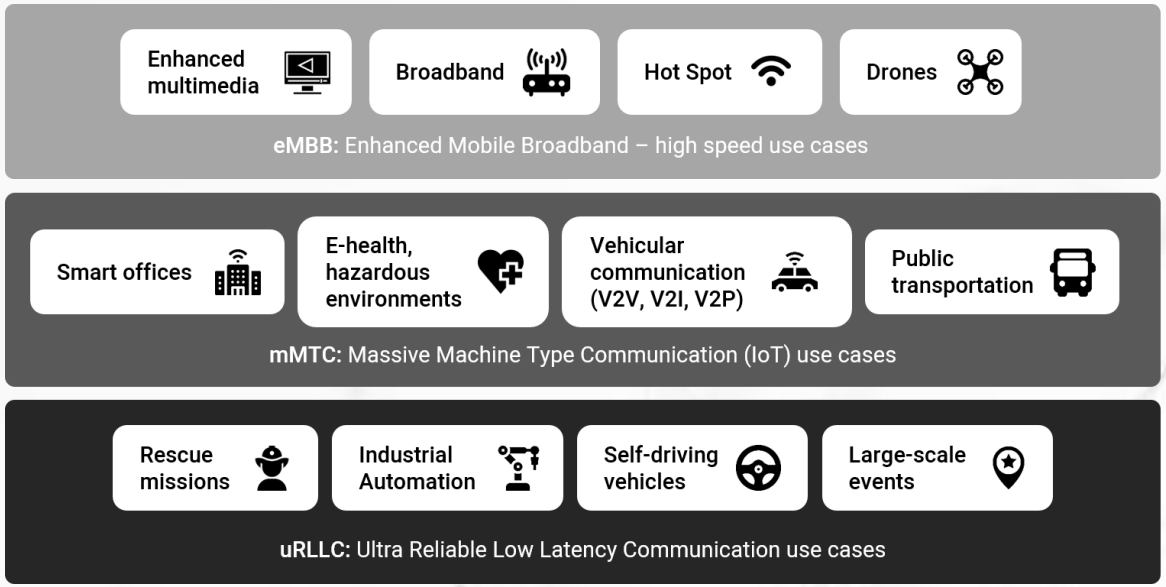


Integration and Testing challenges of 5G Network

Test suites for all **5G use-cases** - **high throughput**, **sub-millisecond latency**, **massive connections**, and enhanced **video services**

What is needed:

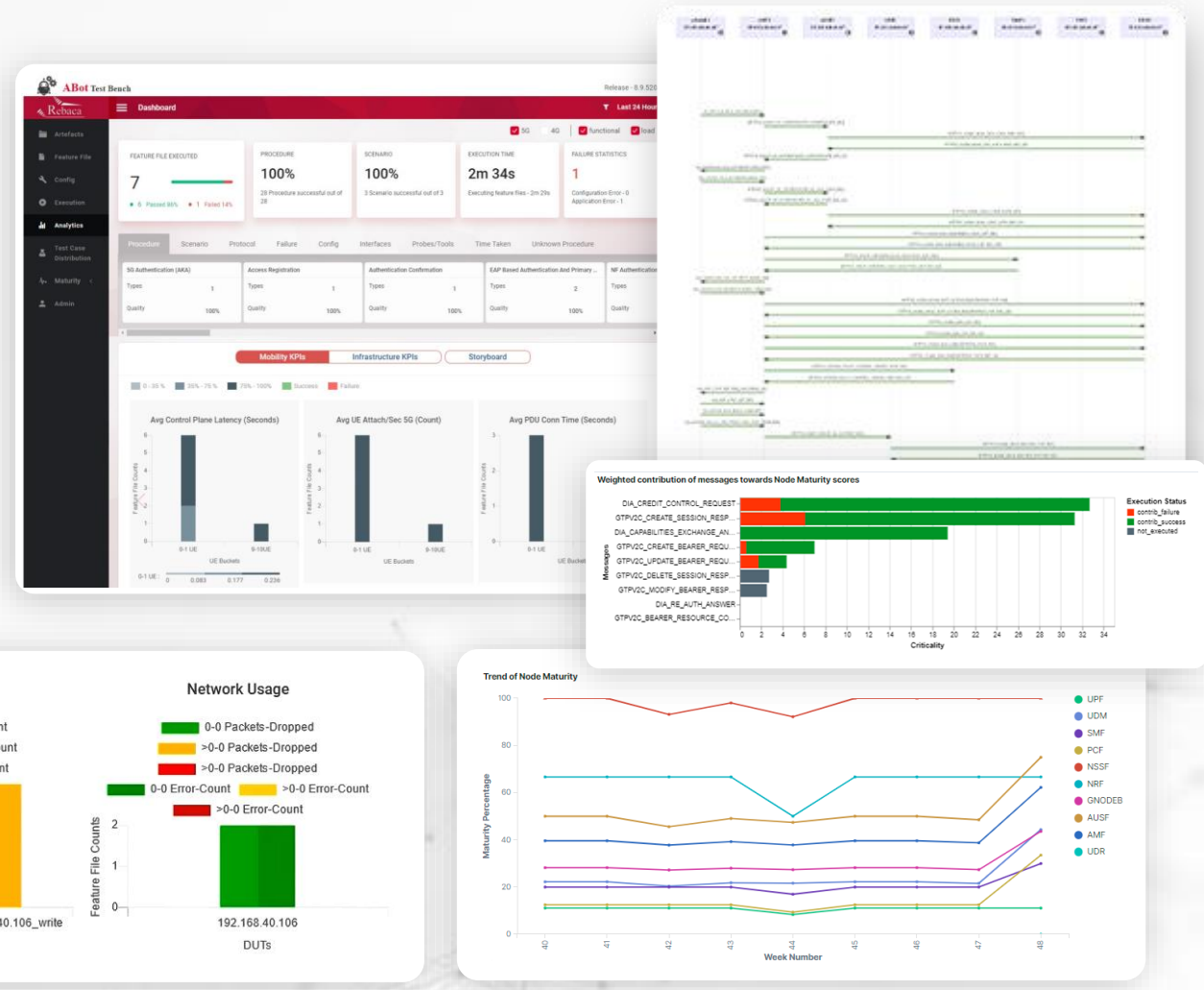
- Automated Service assurance and performance monitoring
- Third party API for rapid integration
- Validate both functional and performance over control and data plane.
- Support Dynamic Slice testing against different traffic type
- Ease of adding application functions testing
- Test script mapped to technical specification
- Automated generation of Test Scripts



Importance of Analytics for 5G Testing, Deployment, and Operation

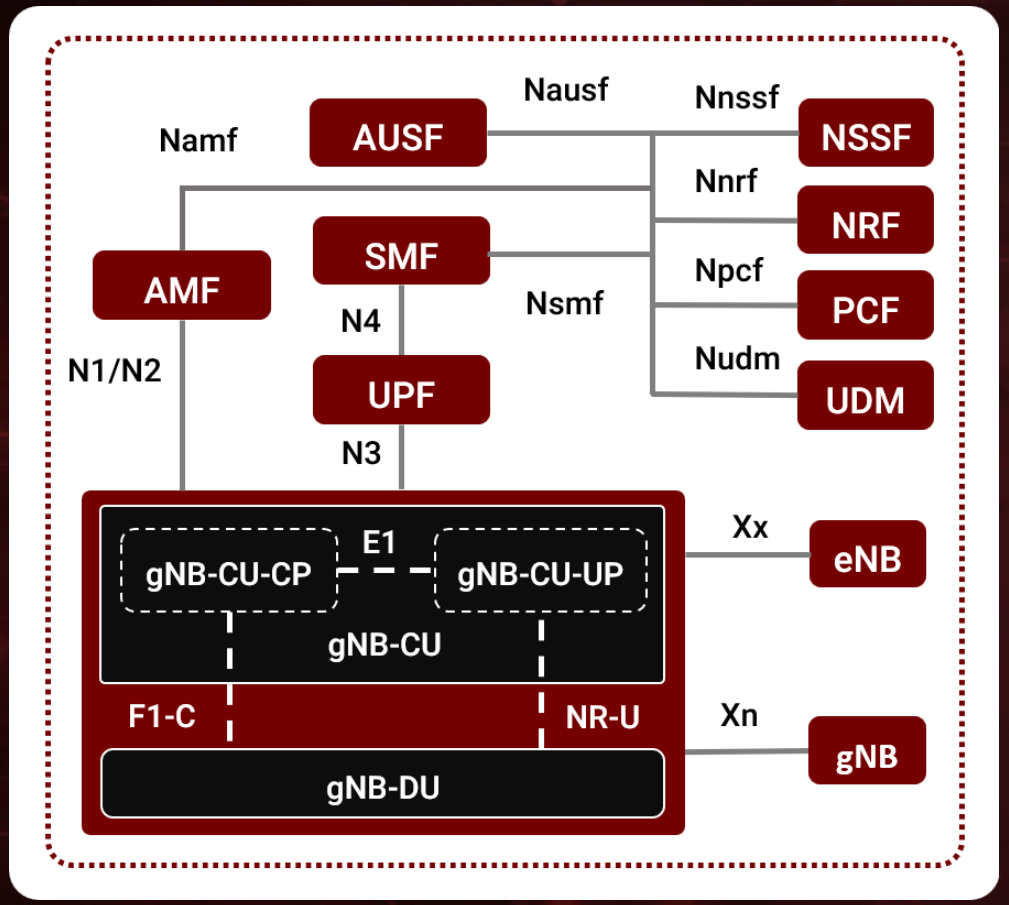
DevOps based approach with **continuous testing, analysis, integration,** and **deployment**

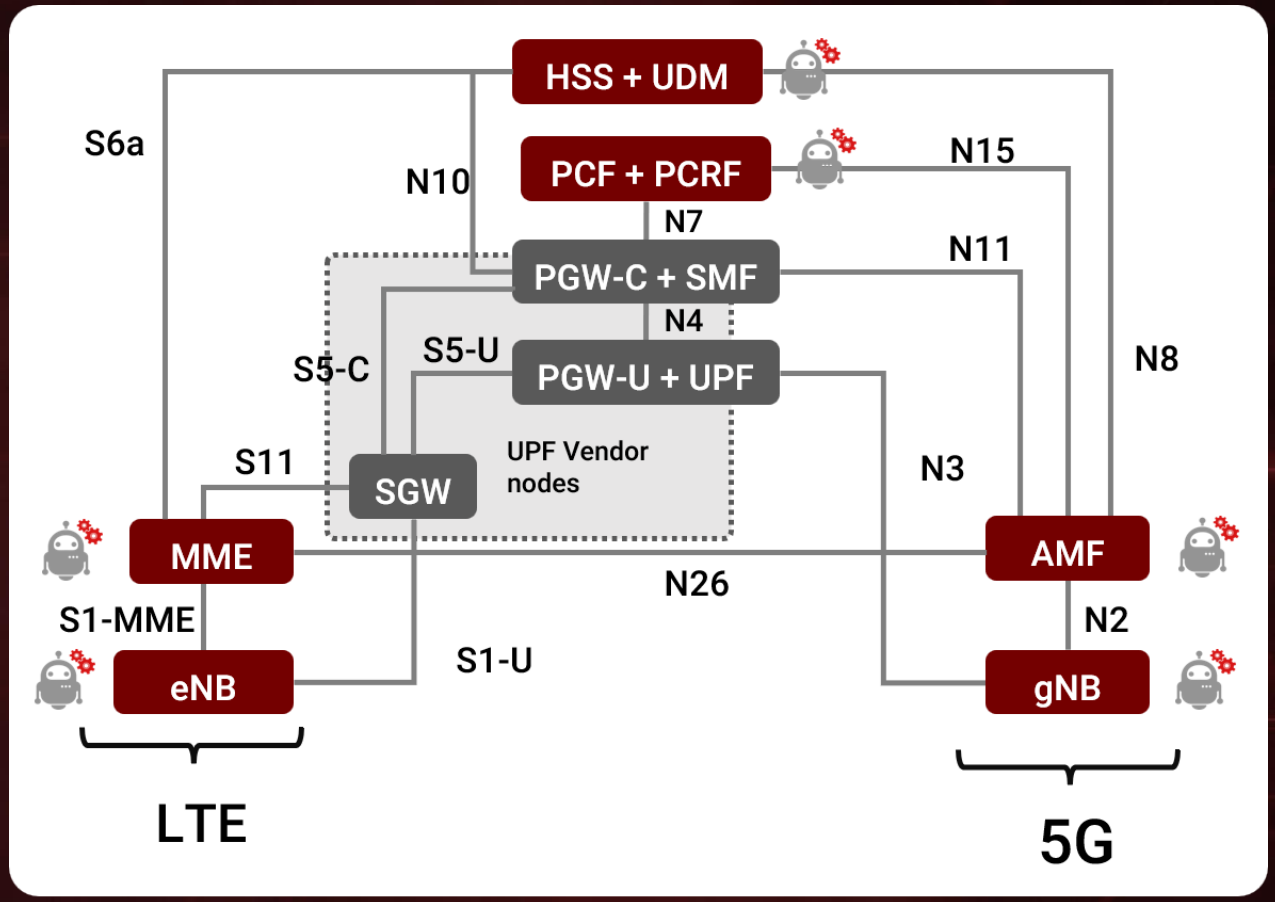
- Understanding the test results with **Root Cause Analysis**
- Deep analysis of **Logs**, **traces**, **KPIs,** etc.
- Classify **test authoring error**, **configuration error** or **application failure**
- Deriving **System/Infra KPIs** and **Mobility statistics** and analyzing them
- Generating **build analytics**



ABot

Cloud native 4G/5G and ORAN Network Protocol Tester



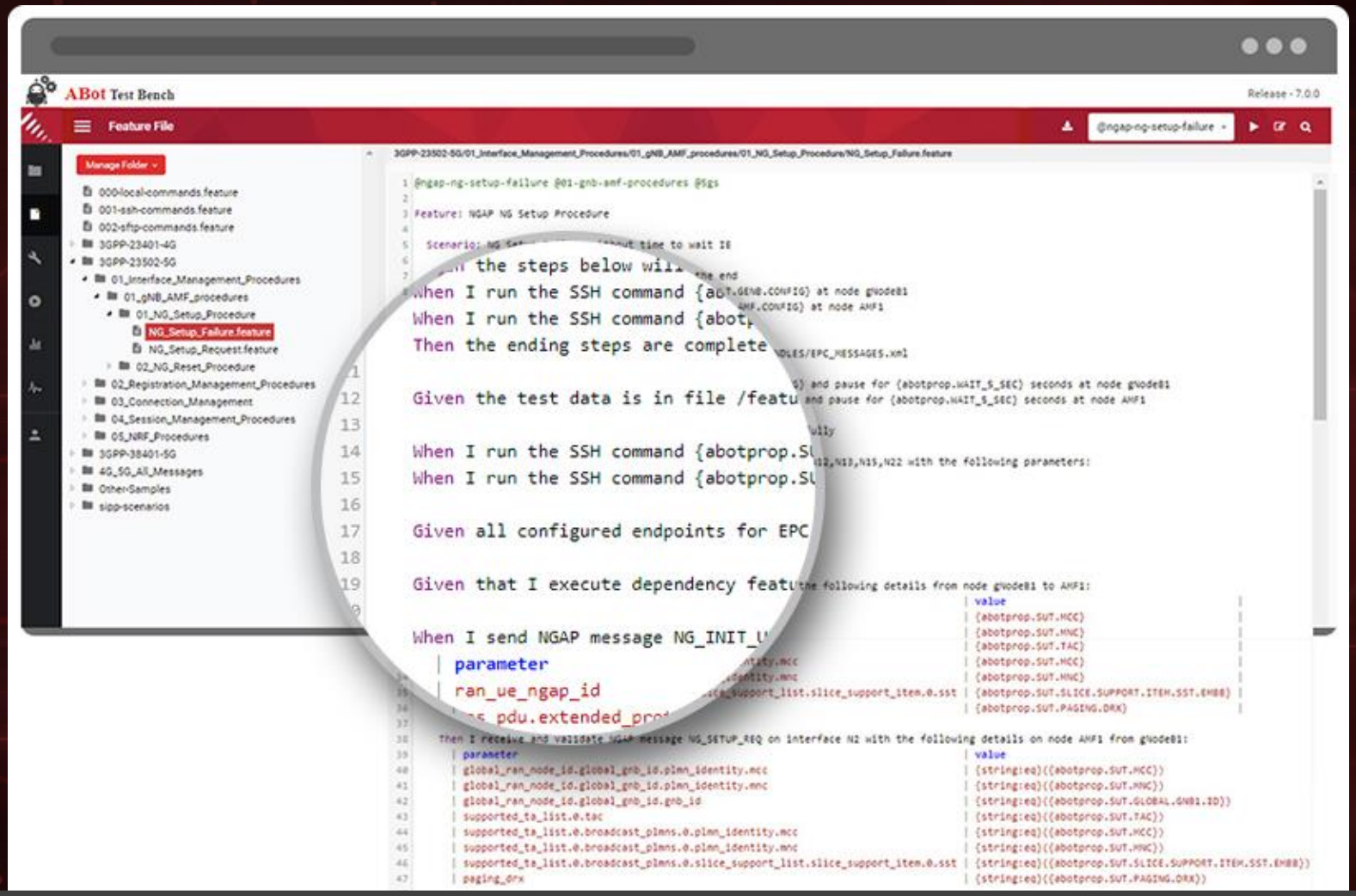


MEC/Pods compatible Light Weight Protocol Stacks

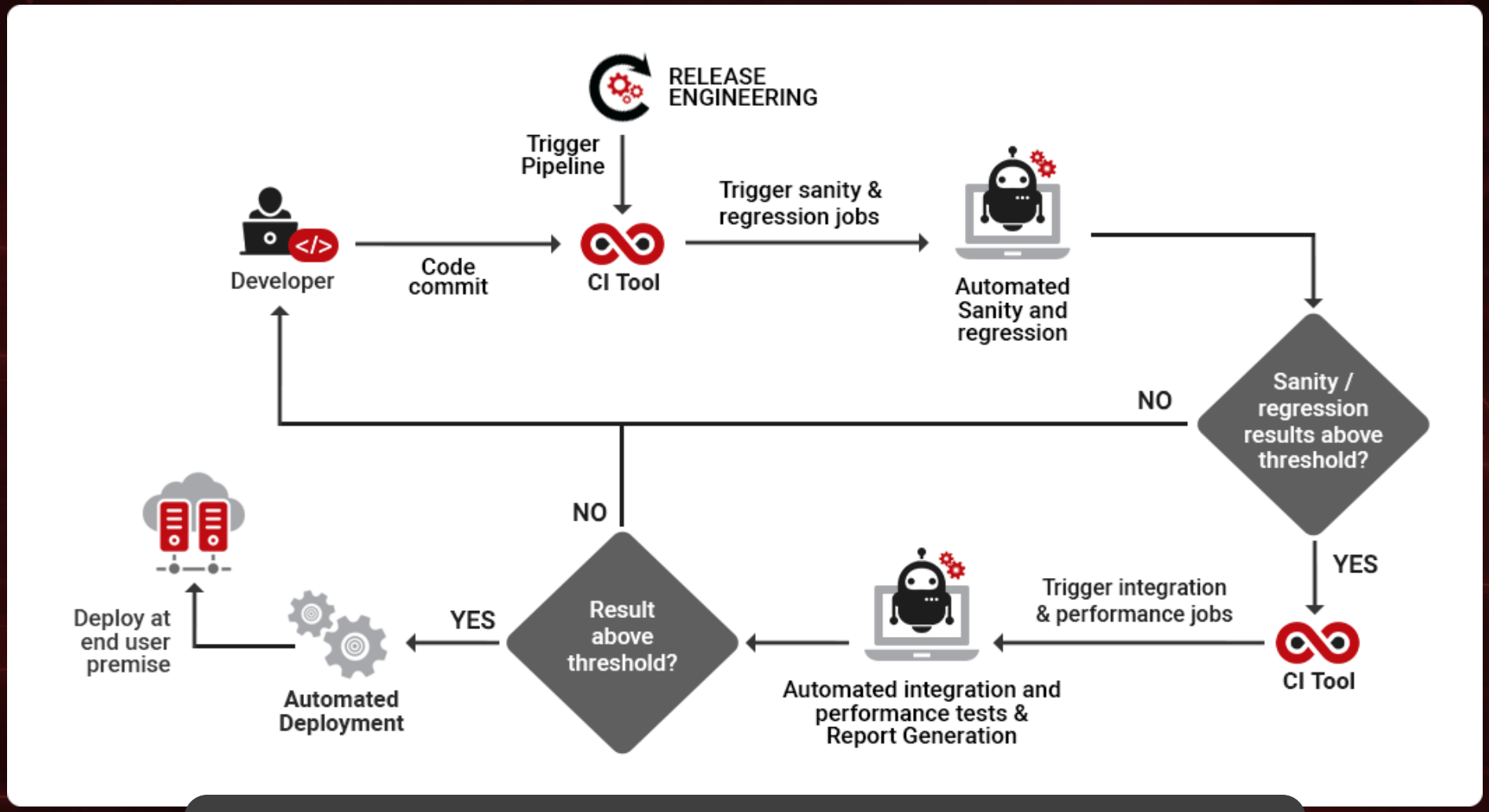
for emulating any 4G/5G/ORAN components

Traffic characteristics analysis

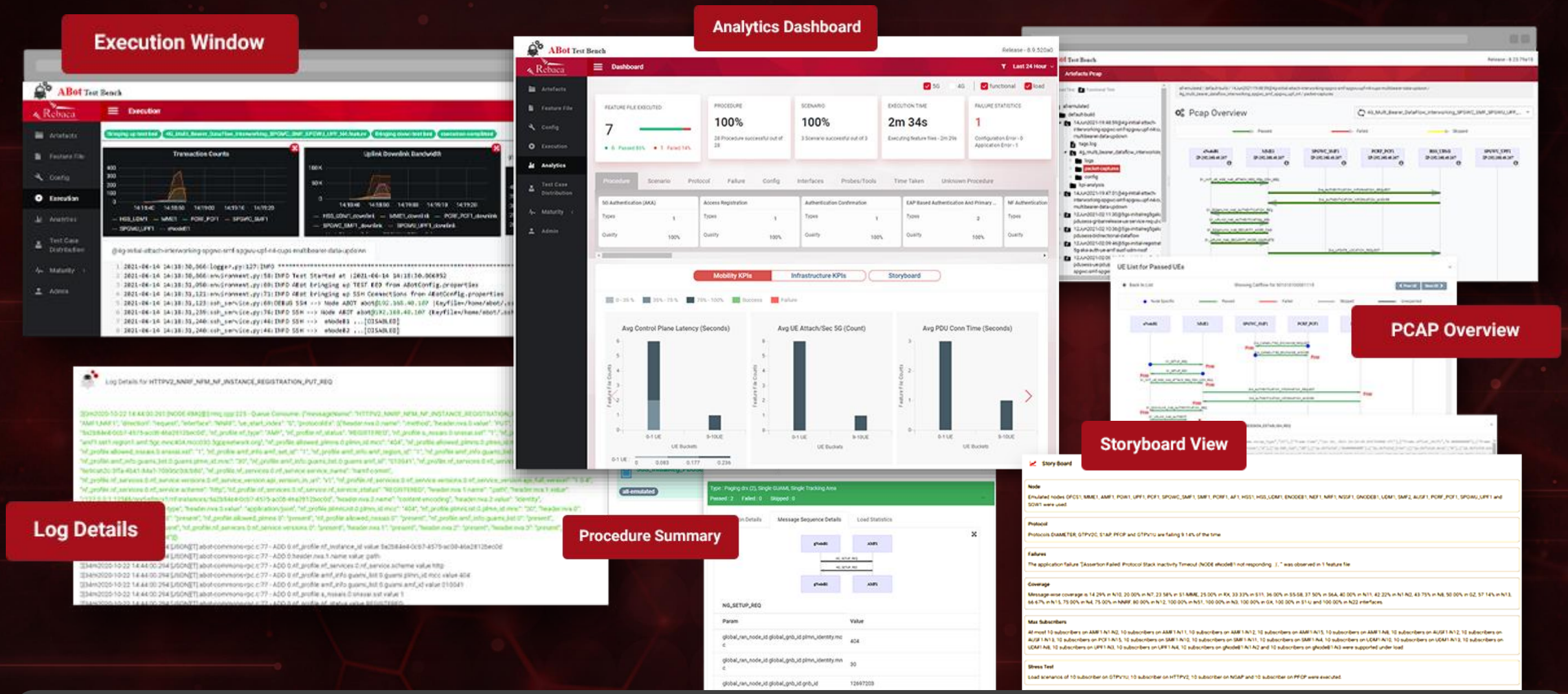
along with video traffic slicing support



Provides extensive testing coverage on 5G /ORAN with english like test scripts
those are easy to modify , deploy, verify, debug to maintain a network.

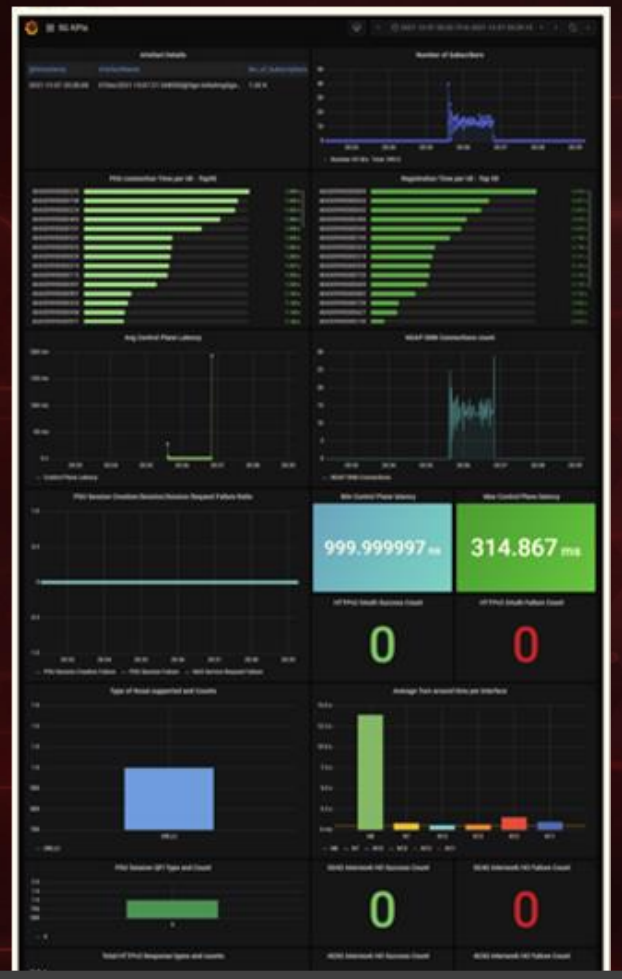


CI/CD Support
for continuous testing, development & integration

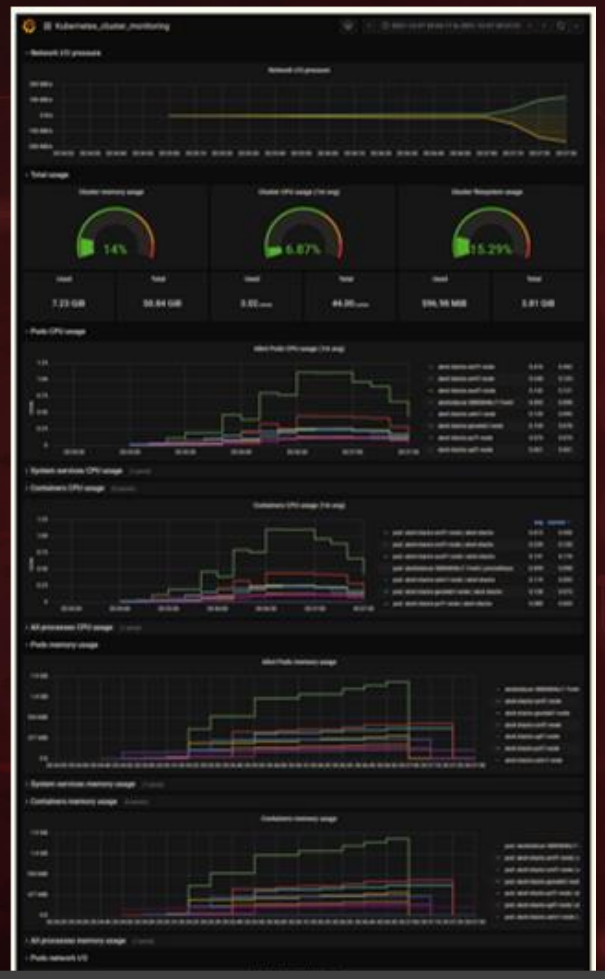


Study network behavior models against real time production traffic patterns
and analyzes the behavior needed for anomaly detection.

Mobility KPI



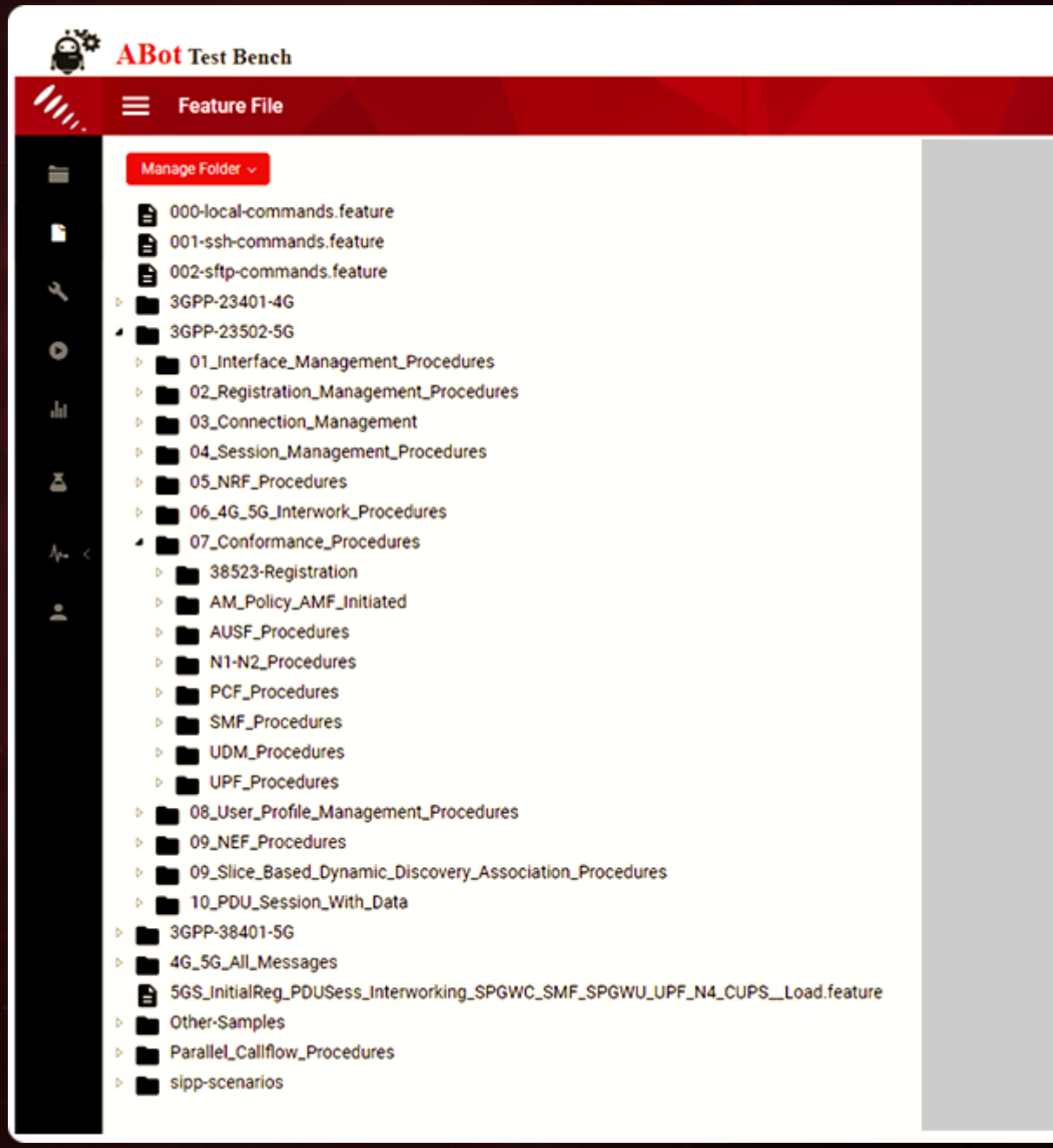
Infrastructure KPI

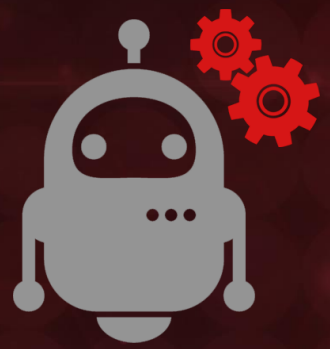


KPI Analysis

Correlation between Network Function performance and its infrastructure/mobility KPIs and provides root-cause analysis for each use.

Plethora of 3GPP Chapter wise
4G/5G/ORAN Test case coverage





Thank You

To know more about ABot visit www.rebaca.com